

WHAT IS CLAIMED IS:

5           1.     A method of making a transreflector from a transparent substrate comprising the steps of applying a reflective coating to one side of the substrate, and thermoforming such one side to form a plurality of angled reflective coated surfaces and a plurality of other angled non-coated light transmissive surfaces.

10           2.     The method of claim 1 wherein the light transmissive surfaces are textured to redirect or transmit light.

          3.     The method of claim 1 wherein optical shapes are formed on or in the light transmissive surfaces to redirect or transmit light.

15           4.     The method of claim 1 further comprising the step of forming optical shapes on or in the other side of the substrate to redirect or transmit light from a backlight or other light source.

20           5.     The method of claim 1 further comprising the step of forming a pattern of individual optical deformities on or in the other side of the substrate to redirect or transmit light.

          6.     The method of claim 5 wherein each of the optical deformities is formed into a well defined shape.

25           7.     The method of claim 5 wherein the size of the optical deformities is varied across the substrate.

          8.     The method of claim 5 wherein the density of the optical deformities is varied across the substrate.

30           9.     The method of claim 5 wherein the orientation of the optical deformities is varied across the substrate.

10. The method of claim 1 further comprising the step of forming optical deformities on or in the other side of the substrate.

5 11. A method of making a transreflector from a transparent substrate comprising the steps of applying a reflective coating to the substrate and then selectively removing the coating to form a plurality of light transmissive surfaces.

10 12. A method of making a transreflector from a transparent substrate comprising the steps of forming a plurality of spaced surfaces or areas on or in one side of the substrate, and applying a reflective coating, film or layer on some of the surfaces or areas to reflect ambient light but not on other of the surfaces or areas to transmit light from a backlight.

15 13. The method of claim 12 wherein the reflective coating is a metallized coating that is deposited onto some of the surfaces or areas using a line of site deposition technique.

20 14. The method of claim 12 wherein the reflective coating is hot stamped onto some of the surfaces or areas.

15 15. The method of claim 12 wherein the reflective coating is a secondary film applied to or in close proximity to some of the surfaces or areas.

25 16. The method of claim 12 further comprising the step of texturing the other surfaces or areas.

17. The method of claim 12 further comprising the step of forming optical shapes on or in the other surfaces or areas.

30 18. The method of claim 12 further comprising the step of forming optical deformities on or in the other side of the substrate.

19. The method of claim 12 further comprising the step of applying an antireflection coating to the other surfaces or areas.

5 20. A method of making a transreflector out of at least two transparent substrates having different indices of refraction comprising the steps of preforming a pattern of optical deformities on or in one side of one of the substrates, using the preformed pattern of optical deformities on or in one side of the one substrate to form an inverse pattern of the optical deformities in or on one side of an other substrate, and bonding the one sides of the substrates together with the optical deformities and inverse optical deformities in mating engagement with one another.

15 21. The method of claim 20 wherein the inverse pattern of optical deformities is formed on or in one side of the other substrate by melting or heat softening the one side of the other substrate and pressing the melted or softened side of the other substrate against the preformed pattern of optical deformities on or in the one side of the one substrate to form the inverse pattern of optical deformities in or on the melted or softened side of the other substrate while preventing the one side of the one substrate from melting or softening, and then cooling the substrates to cause the one side of the other substrate to harden and bond to the one side of the one substrate.

25 22. The method of claim 20 further comprising the step of forming optical deformities in the other side of the substrate that has the lower index of refraction shaped to transmit a specific distribution of light emitted from a backlight or other light source.

30 23. The method of claim 20 further comprising the step of forming optical deformities in the other side of the substrate that has the higher index of refraction shaped to redirect light.

24. The method of claim 20 further comprising the step of applying a texture to the other side of the substrate that has the higher index of refraction.

5 25. A method of making a transreflector out of at least one transparent substrate and a transparent ultra-violet curable polymer having different indices of refraction comprising the steps of preforming a pattern of optical deformities on or in one side of the one substrate, applying the polymer to the preformed pattern of optical deformities on or in the one side of the one substrate, and  
10 curing the polymer to form an inverse pattern of the optical deformities in the polymer and bond the polymer to the one side of the one substrate.